TECHNICAL OVERVIEW

How Saferide Works

From a GPS tracker on the bus to real-time alerts for parents and the school.

by Veytra Technologies

ARCHITECTURE

System Overview

1 · ON THE BUS

Vehicle

GPS tracker

Driver & helper phone

+ RFID reader (optional)

+ Camera (optional)

→

2 · NETWORK

Mobile data

GSM / 4G SIM in the tracker

Phone data for the apps

→

3 · SAFERIDE SERVERS

Platform

Data intake

Live processing

Alert engine

Storage & history

→

4 · OUTPUTS

People & systems

Parent app

Staff apps

School dashboard

WhatsApp, SMS, email

APIs

HARDWARE

What’s on the Bus

STANDARD

GPS tracker

Wired to the bus, with its own SIM. Reports location around the clock.

Driver & helper phone

The Saferide app on their own phone: trips, stops and attendance.

OPTIONAL UPGRADES

RFID card reader

Children tap ID cards on boarding. Scans are stored if signal drops.

Camera

Streams live video to parents during their child’s trip.

Device-agnostic: supports trackers using JT808, GT06 (Concox), Teltonika, EELINK and other protocols.

DATA PATH

From Satellite to Server

01	**Position fix**	The tracker reads its position, speed and direction from GPS satellites.
02	**Send over GSM**	Each point goes out over GSM/4G data, every 20 seconds while moving.
03	**No signal?**	Points are stored on the device and uploaded when the network returns.
04	**Receive & decode**	Our servers decode each device’s protocol and check the data.
05	**Process**	The point updates live maps, ETAs, stop arrivals and alerts.

PROCESSING

What the Server Does

Live location

Each point updates the bus on every live map.

Arrival times

ETAs to each stop are recalculated as the bus moves.

Geofences

Stops, campus and each parent’s radius trigger events.

Trip lifecycle

Trips are created from schedules; late starts raise alerts.

Attendance records

Every marking, tap and absence is stored against the trip.

Maps & addresses

Self-hosted OpenStreetMap maps and India address search.

REAL TIME

The Alert Pipeline

EVENT

Something happens

Bus nears a stop

Child boards

Trip starts late

School announcement

→

RULES

Who needs to know

By role, school and route

Only linked parents

→

DELIVERY

Channel router

App push

WhatsApp

SMS

Email

→

RECIPIENTS

Right people

Parents

Drivers & helpers

Teachers & staff

Transport admins

Each school picks its channels. WhatsApp goes directly through Meta’s official Cloud API.

ATTENDANCE

Attendance Data Flow

INCLUDED **In-app marking**	Driver or helper marks the child in the app	Server records it against the trip	Parent is notified
INCLUDED **Absence report**	Parent reports an absence in the app	List locks at the school's cut-off time	Driver sees it before the trip
OPTIONAL UPGRADE **RFID tap**	Child taps an ID card on the reader	Reader sends the scan, or stores it offline	Parent is notified

OPTIONAL UPGRADE

Live Video for Parents

Camera on the bus → Streaming server on India-region cloud → Parent app

Only during the trip

Parents see the camera only while their child’s trip is running.

Strict access

Access follows the link from parent to child, route and bus.

School control

The school admin can switch parent viewing on or off.

Video runs on its own cloud servers; tracking and alerts stay on Veytra’s servers.

APPS

Apps and Access

ANDROID & iOS

Parent app

Live bus, ETAs, alerts, absence reporting and trip history.

ANDROID & iOS

Driver & helper app

Phone-number login with OTP, today’s trips, stops and attendance.

WEB

School dashboard

Routes, students, staff, live view, announcements and settings.

WEB LINK

Share link

Family members follow the bus from a link, with no app or login.

INTEGRATION

APIs and Integrations

First-class APIs for all data and functionality

Everything the apps and dashboard can do is also available through APIs.

Webhooks

Real-time events pushed to your URL, with full request and response logs.

ERP / SIS sync

Student rosters sync from the school's system, with per-student logs.

Bulk tools

Excel/CSV import with one-click rollback, and bulk address geocoding.

TRUST

Security and Reliability

SECURITY & PRIVACY

- Role-based access for each school’s staff
- Parents see only their own child’s bus
- Camera access only during the child’s trip
- Data hosted in an NTT data centre, Noida

RELIABILITY

- Store-and-forward on trackers and RFID readers
- Dedicated servers running PostgreSQL
- No lock-in to one hardware maker
- Uptime above 99.5%

ROLLOUT

Getting a School Live

01	**Trackers**	Fit GPS trackers, or connect compatible devices already on the buses.
02	**School setup**	Import students from Excel; add staff, routes and settings.
03	**Routes**	Discover stops from a week of GPS history, then fine-tune on the map.
04	**People**	Parents install the app; drivers and helpers get a walkthrough.
05	**Go live**	Trips run from schedules. Add RFID or cameras whenever needed.

NEXT STEP

Questions, or a technical deep-dive?

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